

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit : 1745
Examiner : Ben Lewis
Appellants : William James Moore et al.
Appln. No. : 10/713,833
Filing Date : November 14, 2003
Confirmation No. : 2557
For : ALKALINE ELECTROCHEMICAL CELL

REPLY BRIEF UNDER 37 C.F.R. § 1.193

This Brief is in reply to the Examiner's Answer mailed on August 1, 2008. This Brief is presented to address issues in the arguments raised by the Examiner in the Answer.

The Examiner has rejected all of the claims as obvious in view of 35 U.S.C. § 103(a) over Malservisi et al. (U.S. Patent Application Publication No. 2004/0115532) in view of Tada et al. (U.S. Patent No. 5,209,995).¹ All of the pending claims require the BET specific surface area to be greater than 400 cm²/g, which neither Malservisi et al. nor Tada et al. disclose. In the Examiner's opinion, the claimed invention would have been obvious since Tada et al. recognizes the benefit of changing the surface area of zinc particles. In support for the Examiner's position, the Examiner stated that Tada et al. discloses the following:

"[i]f the bulk specific gravity of the zinc alloy powder would be less than 2.9 [g/cm³], on the one hand, the action of suppressing gases from generating may be reduced because the shapes of the zinc alloy powder particles may become so nearly acicular that the specific surface area of the zinc alloy powder becomes large enough to make their reactivity too high. If the bulk specific gravity thereof would be larger than 3.5 [g/cm³], on the other hand, the discharge performance may be lowered because the shapes of the zinc alloy powder particles become so nearly spherical that their surface area becomes smaller, making their reactivity too low (Col 2 lines 40-54). Therefore, it would have been within the skill of the ordinary artisan to change the surface area of the zinc particles of Malservisi et al. such that the surface area is within a range of that claimed by [Appellants] in order to provide sufficient reactivity.

(Examiner's Answer, pp. 17-18).

¹ The Examiner has rejected claims 5-8, 14-15, 26-29, 32-34, 37-39, and 45-46 as obvious over Malservisi et al. in view of Tada et al. and further in view of Armacanqui (U.S. Patent Application Publication No. 2004/0033418). However, the remaining pending claims were rejected only over Malservisi et al. in combination with Tada et al.

In responding to Appellants' Appeal brief, the Examiner did not address Appellants' argument that, even assuming that the Examiner established a *prima facie* case of obviousness (which Appellants do not agree was established), the claims would not have been obvious since the Tada et al. reference actually teaches away from the zinc powder having a BET specific surface area that is at least greater than 400 cm²/g. (Appeal Brief, p. 10). For example, the Tada et al. reference teaches that reactivity can become too low if the surface area of the particles becomes too small, and that reactivity can become too high if the surface area of the particles becomes too large. (Tada et al., col. 2, lines 40-52). The Tada et al. reference therefore impliedly teaches that there is an upper limit and a lower limit to the surface area of particles which are to be utilized in the cell to achieve a higher reactivity. This is in contrast to Appellants' claimed limitations, which has only a lower limit to the size of the BET specific surface area, namely at least greater than 400 cm²/g.

Moreover, additional portions of Tada et al. confirm Appellants' assertion that Tada et al. teaches away from the claimed invention. For example, Tada et al. states the zinc alloy powder includes predetermined amounts of aluminum and/or calcium, which make the surface of the zinc alloy powder smooth, "thereby reducing the specific surface area involving reactivity of the zinc alloy powder and as a result achieving the effect of suppressing the generation of gases." (Tada et al., col. 2, line 65 - col. 3, line 8). Tada et al. further states that "[i]f the amounts of the aluminum and/or calcium would be outside the ranges, no such expected effect can be achieved." (Tada et al., col. 3, lines 8-10). Thus, Tada et al. teaches that the specific surface should be "reduc[ed]" to suppress the gases. Once again, this is in contrast to Appellants' claimed invention, since all of the pending claims include a lower limit for the specific surface area of the zinc powder. One having ordinary skill in the art would have been discouraged from using a zinc powder with a specific surface area at least greater than 400 cm²/g in order to avoid reactivity from becoming too high, or to avoid the generation of gases. Accordingly, Appellants submit that the combination of Malservisi et al. in view of Tada et al. would not have rendered the pending claims obvious.

Also, the Examiner continued to maintain the rejection of claims 4 and 48-51, which contain the limitation that the volume of zinc is no greater than 24.0% of the second

electrode's volume, over the combination of Malservisi et al. and Tada et al. In the Appellants' Appeal Brief, Appellants asserted that the Examiner had not established a *prima facie* case of obviousness for the claims reciting this limitation, since the Examiner had not correctly calculated the amount of zinc in the second electrode's volume. (Appellants' Appeal Brief, p. 11).

In responding to Appellants' argument, the Examiner stated that it was proper to use the density of KOH in solution, rather than the density of solid KOH, to account for the fact that solid KOH is dissolved in solution. Although the Examiner utilized the density of KOH in solution, the method that the Examiner used to back calculate the amount of zinc is incorrect. The error in the Examiner's calculation occurred by assuming that all of the components were simply additive as if they were solid components, by combining the volume of the KOH as if none of it had dissolved. Accordingly, Appellants submit that the Examiner has not established a *prima facie* case of obviousness for at least claims 4 and 48-51.

Accordingly, for at least the reasons presented above and in the Appeal Brief filed on May 12, 2008, when properly considering the cited references, the pending claims define patentable subject matter. Appellants request that the Examiner's rejections be reversed, and that the application be passed to issuance forthwith.

If there is any fee due in connection with the filing of this Reply Brief, please charge the fee to our Deposit Account No. 16-2463.

Respectfully submitted,

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Date

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